## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

## (19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 10 February 2005 (10.02.2005)

**PCT** 

## (10) International Publication Number WO 2005/013329 A3

(51) International Patent Classification7:

F28D 7/10

(21) International Application Number:

PCT/US2004/024148

(22) International Filing Date:

28 July 2004 (28.07.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/490,470

28 July 2003 (28.07.2003)

(71) Applicant (for all designated States except US): ST. CLAIR SYSTEMS, INC. [US/US]; 12427 31 Mile Road, Romeo, MI 48095 (US).

(71) Applicant and

- (72) Inventor: BONNER, Michael, R. [US/US]; 2320 Pleasant View Drive, Rochester Hills, MI 48306 (US).
- (74) Agent: DUNN, Robert, A.; Dinnin & Dunn, P.C., Suite 500, 2701 Cambridge Ct., Auburn Hills, MI 48326 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM. AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM.

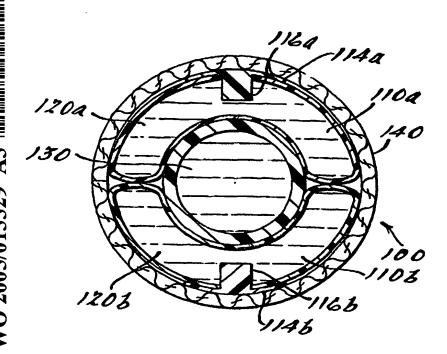
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH. GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

## Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 2 June 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: THERMAL INNER TUBE



(57) Abstract: An elongated structure (100) for the transmission of fluid-based compositions non-ambient temperatures comprising a first conduit (130) for the transmission of a fluid-based composition, at least one flexible, elongated and inflatable temperature control conduit (110a, 110b) for the transmission of a temperature control fluid, the temperature control conduit (110a, 110b) having a relatively rigid elongated reinforcement member (116a, 116b); and elongated cover (140) holding said temperature control conduit (100a, 110b) in thermal communication with the first conduit (130).